

VIRGINIA DROUGHT MONITORING TASK FORCE

Drought Status Report

October 8, 2010

Statewide precipitation for the current water year, October 1, 2009 September 30, 2010 was in the normal range (113% of normal) with all drought evaluation regions greater than 100% normal except the Big Sandy Region (98%). Normal precipitation is defined as the mean precipitation for a thirty year period of record. Precipitation greater than 85% and less than 115% of normal is considered to be in the normal range. Statewide precipitation is now within the normal range (97%) for the calendar year. Statewide precipitation is 97% of normal since June 1st with all drought evaluation regions except the York-James Region having greater than 85% of normal. All drought regions remain under the “Drought Watch” status announced this July. Appendix A contains precipitation tables for periods dating from July 1, 2009 through September 30, 2010 provided by the Climatology Office of the University of Virginia.

The National Weather Service Climate Prediction Center 6-10 day climatologic outlooks call for below normal precipitation for the entire Commonwealth and below normal temperatures for all but western third of the state. For the 8-14 day period, normal precipitation is predicted for all but the western third of the state, which is anticipated to have below normal precipitation. Below normal temperatures are anticipated over the 8-14 day period for the entire state. The one month outlook calls for equal chances of below normal, normal and above normal precipitation for the entire Commonwealth. The one month temperature outlook calls for equal chances of below normal, normal and above normal temperatures statewide. The three month outlook calls for equal chances of below normal, normal and above normal temperatures and precipitation for the entire Commonwealth.

The latest NOAA U.S. National Drought Monitor indicates “abnormally dry” to “moderate drought” conditions exist in approximately 56% of the Commonwealth. Southwest Virginia, a portion of South-central Virginia and the Coastal Plain are the areas that are not in an “abnormally dry” or “moderate drought” condition. Approximately 1% of Virginia (Frederick County) is experiencing “severe drought” conditions, as designated in the U.S. National Drought Monitor. The Seasonal Drought Outlook for the United States from now through December 2010 forecasts “some improvement” in the drought conditions along the Valley and Ridge portion of the state that is currently classified as “abnormally dry” to “severe”. (Appendix D).

The number of public water supply systems under some sort of drought related restriction have been decreasing in October. While the Virginia Department of Health (VDH) has not reported any impacts to public water supplies that have compromised their ability to provide the needs of their customers, 12 systems are under voluntary water conservation requirements and 9 systems are under mandatory water conservation requirements. Of the 49 systems listed in the VDH report, 26 are rated as having a “Better” overall water supply situation, one is rated as having a “Worse” overall water supply situation and all other systems are rated as being in a “Stable” situation (Appendix F).

The Virginia Department of Forestry (VDOF) continues to report an above normal rate of wildfire occurrence, with 122 fires reported in the month of July alone. The DOF is becoming increasingly concerned about the potential for a significant fall fire season.

The Department of Game and Inland Fisheries reports that recent rain events increased water supply flows to the trout hatcheries and all facilities are reporting better than normal water levels. Lake and stream levels have also improved, and all boat access sites across the Commonwealth are open. Trout stocking began October 1, and it currently appears that all waters have adequate flows for Fall stockings.

Reports from the Climatology Office of the University of Virginia, the Virginia Department of Environmental Quality, the United States Geological Survey, the Virginia Department of Forestry and the Virginia Department of Agriculture and Consumer Services, follow.

Virginia Department of Forestry Wildfire Conditions

Summertime wildfire activity has remained at more elevated levels than what would be considered normal for Virginia. For the month of July 2010, the VDOF responded to 122 wildfires which burned 543 acres. The leading cause of wildfire continues to be human carelessness.

Observed fire behavior over the last few weeks indicates that wildfire occurrence, rates of spread and fire intensity is much greater than would normally be expected during this time of the year. The low fuel moisture conditions overall make suppression operations more difficult and lead to increased long term monitoring which can place a drain on firefighter resources. This has not been a significant problem up to this point, however it can have significant problem if the drought conditions persist moving in to our normal fall wildfire season

At least 26 counties across the Commonwealth have enacted local burning bans due to the increased risk of wildfire. The Department of Forestry's Cumulative Severity Index (CSI), which is a detailed measure of soil moisture conditions taken at six location across the Commonwealth indicate the driest conditions that we have seen within the last ten years.

The DOF is becoming increasingly concerned about the potential for a significant fall fire season. The official fall wildfire season runs from October 15 – November 30. Current predictions of warmer and drier than normal conditions through December indicate that little relief is expected through the end of the year and that the fall wildfire season could more troublesome than any we have faced in the last ten years. The agency has begun early contingency planning to be better prepared for higher than normal levels of wildfire activity headed into October.

Report of the Climatology Office of the University of Virginia

October 10, 2010

In the last few days of September, storm activity, supported by a generous feed of tropical moisture, brought significant widespread rainfall to the Commonwealth. This turned the month from one of the driest Septembers on record into one with above normal rainfall for all but the far southwestern portions of Virginia.

Moving into the colder months (October through March) brings us a shift in precipitation mechanisms from (often scattered) thunderstorm activity to larger-scale mid-latitude storm systems and associated frontal passages. This source has a much higher potential to bring ample widespread precipitation across the state.

These colder months also mark a distinct decline in the rate of moisture loss to evaporation, and allow precipitation an opportunity to penetrate the soil layers and replenish long-term reserves. Thus, storm activity from late fall to early spring is crucial to water supplies. A season with relatively few such systems often leads to a summer with long-term moisture difficulties.

In addition, hurricane season remains in session, and conditions are still favorable for the development and strengthening of tropical systems in the Atlantic Basin, but their movements are crucial to bringing moisture to the Commonwealth. Nonetheless, just one or two well-aimed systems, can provide impressive precipitation amounts in a brief period of time.

United States Geological Survey Streamflow and Ground Water Levels

Last week's tropical precipitation brought several inches of rain to the western portions of Virginia and increasing to 12-15 inches along the eastern coast over approximately a two day period. Streamflow at most gages began increasing almost immediately and gages generally are recording levels in the normal to above normal range. Recession from the peak flow has been more gradual than anticipated which indicates that there was recharge to the groundwater system.

Water levels increased at almost all wells that monitor levels in the surficial aquifers. Fourteen of twenty wells are recording levels in the normal range for this time of year. Six wells are recording levels in the below normal range. At least some of the water-level increase is because of moisture entering the groundwater system rather than simply a pressure response generated by moisture in the upper layers of soil. This is indicated by a rise of water level following the storm event with a slow recession from the peak. If most of the water-level increase was caused by a pressure response, the recession would be faster.

Virginia Department of Environmental Quality Conditions of Major Reservoirs

Four large multi-purpose reservoirs are identified as drought indicators in the *Virginia Drought Assessment and Response Plan (Plan)*; Smith Mountain Lake, Lake Moomaw, Lake Anna and Kerr Reservoir. Of these four reservoirs only Lake Moomaw is currently at a level below defined drought watch status. Below is a summary of large reservoir conditions:

- As of October 8th Lake Moomaw on the Jackson River is at 1562.8 feet, and is dropping at a rate of ~0.12 ft per day. Approximately 27.8% of conservation storage remains. Lake Moomaw is 2.2 ft below the Drought Watch level (1565 feet MSL).
- As of October 8th Kerr Reservoir is currently approximately 1.01 ft above the Guide Curve and is anticipated to drop 0.47 ft by October 15th. Drought Watch status is reached at greater than 3 ft below the Guide Curve.
- As of October 8th Smith Mountain Lake is at elevation 794.5 ft which is 0.5 ft below full pond. The Drought Watch stage for Smith Mountain Lake is elevation 793 ft and below.
- As of October 8th, Lake Anna was at elevation 248.6 feet (1.4 feet below full) and dropped approximately 0.1 ft since October 4th. The Drought Watch stage for Lake Anna Lake is elevation 248 feet and below.

Virginia Department of Agriculture and Consumer Services Status of Agricultural Drought

Overview

According to the USDA Crop Weather Report released on October 4, 2010, 22% of topsoil moisture ranged from short to very short. Much needed rain fell over most of the state ranging from as little as a few inches to as much as 16 inches. The rainfall had a varied impact on the agricultural community around the state. In some cases the rainfall provided enough rain to benefit producers as they prepare for fall planting. In other cases the rain caused flooding and damaged crops in the field.

As of October 14, 2010, sixty-three Virginia localities have formally requested the Governor's assistance in obtaining federal agricultural disaster designation due to drought conditions. The USDA/Farm Service Agency has completed the official loss assessment reports (LARs) for 60 of these localities – Accomack, Albemarle, Amelia, Amherst, Appomattox, Bedford, Brunswick, Buckingham, Campbell, Caroline, Carroll,

Charlotte, Clarke, Culpeper, Cumberland, Dinwiddie, Essex, Fauquier, Fluvanna, Franklin, Frederick, Goochland, Greene, Greensville, Halifax, Hanover, Isle of Wight, James City, King and Queen, King George, King William, Lancaster, Louisa, Lunenburg, Mecklenburg, Middlesex, Montgomery, Nelson, Northampton, Northumberland, Nottoway, Orange, Page, Patrick, Pittsylvania, Powhatan, Prince Edward, Pulaski, Rappahannock, Richmond (County), Rockbridge, Shenandoah, Southampton, Spotsylvania, Stafford, Suffolk (City), Surry, Warren, Westmoreland and York. LARs are pending for the three remaining localities – Henrico, Mathews and New Kent.

South Central Virginia

In South Central Virginia, rainfall varied from five to eight inches. Overall, the rain was beneficial, but rain did not have a great impact on crops as it was too late in the growing season. The rainfall will benefit the remaining tobacco crop to be harvested by putting more sap into the leaf which will improve the quality of the cured tobacco. Recent rains will help prepare the soil for fall planting of small grains. Recent rainfall will probably not have any impact on improving soybean yields as most fields had already begun to turn brown or mature.

Northern Neck

The rain was extremely helpful for the rather large broccoli crop in the Northern Neck. The moisture coupled with cooler temperatures will certainly help to improve crop yields and quality.

Eastern Virginia

In Eastern Virginia, rainfall last week ranged from seven inches to 18.5 inches with most growers receiving around 15 or 16 inches. That much rain will likely have a negative impact on crops.

Cotton growers estimate a loss of lint (fiber) from the heavy rain and winds. With all the rain, leaf growth will be a problem and a second spray of defoliant will likely be necessary. Many growers that contracted cotton will have to buy back their contracts if they don't have enough cotton to fulfill their obligations.

Peanuts that had been dug prior to the rain will no longer have bright shells and some may mold with the cool, wet weather we are now experiencing.

Strawberry growers that have not planted will have to delay planting and the optimum planting dates were last week and this week. Fields are too muddy to plant.

U-Pick pumpkins operations report that there may be delayed opening due to the recent rains. Producers are ready to sell the pumpkins, but field and parking lot conditions made it difficult for customers to park and shop.

Impact on Dairies

Rains across the rest of the state brought much needed moisture; however the annual amount is still well short of our averages. Recent rains have greened up pastures and allowed dairymen to cease feeding hay.

Impact on Livestock

The rain improved pasture grass enough to allow livestock to graze in many parts of the state. This temporarily provided producers a break from feeding hay. Unfortunately pasture grasses are so low or have been grazed off, therefore, it is expected that producers will have to return to hay to supplement grazing.

Impact on Streams, Wells & Springs

Outside of southwest Virginia, much of the state suffered from the water shortage with low streams and dry springs. Recent rains seemed to have provided at least temporary relief there. Rivers, creeks, and lake levels have increased but are not yet back to normal levels.

APPENDIX A

Precipitation Departures by Drought Evaluation Region

PRELIMINARY PRECIPITATION SUMMARY

Prepared:
10/04/10

DROUGHT REGION	OBSERVED	Sep 1, 2010 NORMAL	- Sep 30, 2010 DEPARTURE	% OF NORM.
1 Big Sandy	2.31	3.46	-1.15	67%
2 New River	3.96	3.41	0.55	116%
3 Roanoke	6.25	4.23	2.02	148%
4 Upper James	5.52	3.50	2.02	158%
5 Middle James	6.11	4.13	1.98	148%
6 Shenandoah	5.00	3.67	1.33	136%
7 Northern Virginia	6.42	4.07	2.35	158%
8 Northern Piedmont	6.29	4.28	2.01	147%
9 Chowan	8.30	4.43	3.87	187%
10 Northern Coastal Plain	7.68	4.09	3.59	188%
11 York-James	9.27	4.90	4.37	189%
12 Southeast Virginia	13.28	4.43	8.85	300%
13 Eastern Shore	4.56	3.61	0.95	126%
Statewide	6.04	4.00	2.04	151%

DROUGHT REGION	OBSERVED	Aug 1, 2010 NORMAL	- Sep 30, 2010 DEPARTURE	% OF NORM.
1 Big Sandy	7.45	7.29	0.16	102%
2 New River	9.20	6.72	2.48	137%
3 Roanoke	12.69	7.95	4.74	160%
4 Upper James	8.49	6.83	1.66	124%
5 Middle James	10.29	7.95	2.34	129%
6 Shenandoah	7.69	7.00	0.69	110%
7 Northern Virginia	10.68	7.92	2.76	135%
8 Northern Piedmont	9.70	8.10	1.60	120%
9 Chowan	12.57	8.74	3.83	144%
10 Northern Coastal Plain	12.02	7.95	4.07	151%
11 York-James	10.97	9.77	1.20	112%
12 Southeast Virginia	16.48	9.55	6.93	173%
13 Eastern Shore	9.34	7.48	1.86	125%
Statewide	10.41	7.83	2.58	133%

DROUGHT REGION	OBSERVED	Jul 1, 2010 NORMAL	- Sep 30, 2010 DEPARTURE	% OF NORM.
1 Big Sandy	11.18	11.77	-0.59	95%
2 New River	12.04	10.51	1.53	115%
3 Roanoke	15.94	12.34	3.60	129%
4 Upper James	12.15	10.87	1.28	112%
5 Middle James	12.16	12.36	-0.20	98%
6 Shenandoah	11.08	10.76	0.32	103%
7 Northern Virginia	14.14	11.69	2.45	121%
8 Northern Piedmont	12.03	12.50	-0.47	96%

9	Chowan	14.25	13.25	1.00	108%
10	Northern Coastal Plain	13.48	12.40	1.08	109%
11	York-James	14.33	14.87	-0.54	96%
12	Southeast Virginia	20.20	14.62	5.58	138%
13	Eastern Shore	11.43	11.48	-0.05	100%
	Statewide	13.18	12.17	1.01	108%

DROUGHT REGION		OBSERVED	Jun 1, 2010 NORMAL	- Sep 30, 2010 DEPARTURE	% OF NORM.
1	Big Sandy	15.96	15.91	0.05	100%
2	New River	14.61	14.36	0.25	102%
3	Roanoke	18.03	16.23	1.80	111%
4	Upper James	14.00	14.58	-0.58	96%
5	Middle James	14.03	15.87	-1.84	88%
6	Shenandoah	12.90	14.47	-1.57	89%
7	Northern Virginia	15.49	15.55	-0.07	100%
8	Northern Piedmont	14.44	16.51	-2.07	87%
9	Chowan	16.77	16.90	-0.13	99%
10	Northern Coastal Plain	15.49	15.96	-0.47	97%
11	York-James	15.26	18.28	-3.02	83%
12	Southeast Virginia	23.44	18.23	5.21	129%
13	Eastern Shore	12.95	14.46	-1.51	90%
	Statewide	15.55	15.96	-0.41	97%

DROUGHT REGION		OBSERVED	May 1, 2010 NORMAL	- Sep 30, 2010 DEPARTURE	% OF NORM.
1	Big Sandy	21.41	20.73	0.68	103%
2	New River	18.42	18.57	-0.15	99%
3	Roanoke	22.68	20.56	2.12	110%
4	Upper James	17.80	18.86	-1.06	94%
5	Middle James	18.08	20.11	-2.03	90%
6	Shenandoah	15.96	18.31	-2.35	87%
7	Northern Virginia	20.13	19.89	0.24	101%
8	Northern Piedmont	18.11	20.73	-2.62	87%
9	Chowan	22.19	20.99	1.20	106%
10	Northern Coastal Plain	17.89	20.12	-2.23	89%
11	York-James	20.16	22.55	-2.39	89%
12	Southeast Virginia	27.64	22.09	5.55	125%
13	Eastern Shore	15.07	17.98	-2.91	84%
	Statewide	19.71	20.22	-0.51	97%

DROUGHT REGION		OBSERVED	Apr 1, 2010 NORMAL	- Sep 30, 2010 DEPARTURE	% OF NORM.
1	Big Sandy	24.09	24.49	-0.40	98%
2	New River	20.27	22.12	-1.85	92%
3	Roanoke	24.44	24.36	0.08	100%
4	Upper James	19.51	22.26	-2.75	88%
5	Middle James	19.83	23.45	-3.62	85%
6	Shenandoah	17.31	21.23	-3.92	82%

7	Northern Virginia	21.72	23.19	-1.47	94%
8	Northern Piedmont	19.64	24.02	-4.38	82%
9	Chowan	23.63	24.42	-0.79	97%
10	Northern Coastal Plain	19.48	23.21	-3.73	84%
11	York-James	21.11	25.85	-4.74	82%
12	Southeast Virginia	28.83	25.34	3.49	114%
13	Eastern Shore	16.25	20.90	-4.65	78%
	Statewide	21.43	23.64	-2.21	91%

DROUGHT REGION		OBSERVED	Mar 1, 2010 NORMAL	- Sep 30, 2010 DEPARTURE	% OF NORM.
1	Big Sandy	26.96	28.74	-1.78	94%
2	New River	24.33	25.79	-1.46	94%
3	Roanoke	29.57	28.63	0.94	103%
4	Upper James	23.61	26.05	-2.44	91%
5	Middle James	24.97	27.51	-2.54	91%
6	Shenandoah	22.03	24.43	-2.40	90%
7	Northern Virginia	25.46	26.85	-1.39	95%
8	Northern Piedmont	24.56	27.83	-3.27	88%
9	Chowan	28.22	28.79	-0.57	98%
10	Northern Coastal Plain	25.63	27.49	-1.86	93%
11	York-James	26.72	30.54	-3.82	88%
12	Southeast Virginia	35.14	29.54	5.60	119%
13	Eastern Shore	22.48	25.21	-2.73	89%
	Statewide	26.12	27.68	-1.56	94%

DROUGHT REGION		OBSERVED	Feb 1, 2010 NORMAL	- Sep 30, 2010 DEPARTURE	% OF NORM.
1	Big Sandy	29.74	32.32	-2.58	92%
2	New River	26.75	28.72	-1.97	93%
3	Roanoke	32.22	31.94	0.28	101%
4	Upper James	25.93	28.90	-2.97	90%
5	Middle James	28.19	30.63	-2.44	92%
6	Shenandoah	24.91	26.84	-1.93	93%
7	Northern Virginia	29.51	29.52	-0.01	100%
8	Northern Piedmont	27.09	30.80	-3.71	88%
9	Chowan	31.47	31.96	-0.49	98%
10	Northern Coastal Plain	28.93	30.63	-1.70	94%
11	York-James	30.41	34.07	-3.66	89%
12	Southeast Virginia	38.89	33.04	5.85	118%
13	Eastern Shore	26.36	28.40	-2.04	93%
	Statewide	29.09	30.81	-1.72	94%

DROUGHT REGION		OBSERVED	Jan 1, 2010 NORMAL	- Sep 30, 2010 DEPARTURE	% OF NORM.
1	Big Sandy	33.97	36.05	-2.08	94%
2	New River	31.26	31.93	-0.67	98%
3	Roanoke	37.29	35.86	1.43	104%
4	Upper James	30.25	32.18	-1.93	94%

5	Middle James	32.58	34.29	-1.71	95%
6	Shenandoah	28.72	29.69	-0.97	97%
7	Northern Virginia	32.21	32.80	-0.59	98%
8	Northern Piedmont	31.02	34.32	-3.30	90%
9	Chowan	35.49	36.07	-0.58	98%
10	Northern Coastal Plain	32.63	34.38	-1.75	95%
11	York-James	34.84	38.21	-3.37	91%
12	Southeast Virginia	43.21	37.20	6.01	116%
13	Eastern Shore	29.38	31.96	-2.58	92%
	Statewide	33.30	34.45	-1.15	97%

DROUGHT REGION		OBSERVED	Dec 1, 2009 NORMAL	- Sep 30, 2010 DEPARTURE	% OF NORM.
1	Big Sandy	39.66	39.69	-0.03	100%
2	New River	38.55	34.64	3.91	111%
3	Roanoke	44.86	39.11	5.75	115%
4	Upper James	37.64	35.13	2.51	107%
5	Middle James	40.73	37.46	3.27	109%
6	Shenandoah	33.96	32.28	1.68	105%
7	Northern Virginia	38.45	35.90	2.55	107%
8	Northern Piedmont	37.51	37.60	-0.09	100%
9	Chowan	43.43	39.09	4.34	111%
10	Northern Coastal Plain	40.54	37.66	2.88	108%
11	York-James	41.79	41.60	0.19	100%
12	Southeast Virginia	51.02	40.38	10.64	126%
13	Eastern Shore	37.91	35.20	2.71	108%
	Statewide	40.44	37.57	2.87	108%

DROUGHT REGION		OBSERVED	Nov 1, 2009 NORMAL	- Sep 30, 2010 DEPARTURE	% OF NORM.
1	Big Sandy	41.91	42.97	-1.06	98%
2	New River	43.55	37.67	5.88	116%
3	Roanoke	53.04	42.47	10.57	125%
4	Upper James	42.53	38.49	4.04	110%
5	Middle James	49.30	40.97	8.33	120%
6	Shenandoah	37.82	35.33	2.49	107%
7	Northern Virginia	42.39	39.31	3.08	108%
8	Northern Piedmont	43.57	41.40	2.17	105%
9	Chowan	53.07	42.20	10.87	126%
10	Northern Coastal Plain	49.29	40.80	8.49	121%
11	York-James	51.05	44.97	6.08	114%
12	Southeast Virginia	61.40	43.45	17.95	141%
13	Eastern Shore	45.46	38.14	7.32	119%
	Statewide	47.08	40.80	6.28	115%

DROUGHT REGION		OBSERVED	Oct 1, 2009 NORMAL	- Sep 30, 2010 DEPARTURE	% OF NORM.
1	Big Sandy	44.95	45.85	-0.90	98%

2	New River	46.24	40.84	5.40	113%
3	Roanoke	55.60	46.18	9.42	120%
4	Upper James	45.31	41.74	3.57	109%
5	Middle James	52.36	44.81	7.55	117%
6	Shenandoah	40.57	38.52	2.05	105%
7	Northern Virginia	47.20	42.79	4.41	110%
8	Northern Piedmont	46.99	45.39	1.60	104%
9	Chowan	55.12	45.78	9.34	120%
10	Northern Coastal Plain	53.50	44.31	9.19	121%
11	York-James	54.14	48.50	5.64	112%
12	Southeast Virginia	63.71	47.11	16.60	135%
13	Eastern Shore	49.83	41.35	8.48	121%
	Statewide	50.08	44.30	5.78	113%

	DROUGHT REGION	OBSERVED	Sep 1, 2009 NORMAL	- Sep 30, 2010 DEPARTURE	% OF NORM.
1	Big Sandy	50.13	49.31	0.82	102%
2	New River	50.25	44.25	6.00	114%
3	Roanoke	58.66	50.41	8.25	116%
4	Upper James	48.59	45.24	3.35	107%
5	Middle James	55.53	48.94	6.59	113%
6	Shenandoah	42.79	42.19	0.60	101%
7	Northern Virginia	49.45	46.86	2.59	106%
8	Northern Piedmont	49.87	49.67	0.20	100%
9	Chowan	59.43	50.21	9.22	118%
10	Northern Coastal Plain	56.58	48.40	8.18	117%
11	York-James	60.05	53.40	6.65	112%
12	Southeast Virginia	71.02	51.54	19.48	138%
13	Eastern Shore	56.31	44.96	11.35	125%
	Statewide	53.72	48.30	5.42	111%

	DROUGHT REGION	OBSERVED	Aug 1, 2009 NORMAL	- Sep 30, 2010 DEPARTURE	% OF NORM.
1	Big Sandy	54.62	53.14	1.48	103%
2	New River	54.76	47.56	7.20	115%
3	Roanoke	63.00	54.13	8.87	116%
4	Upper James	51.97	48.57	3.40	107%
5	Middle James	59.05	52.76	6.29	112%
6	Shenandoah	45.83	45.52	0.31	101%
7	Northern Virginia	53.41	50.71	2.70	105%
8	Northern Piedmont	53.02	53.49	-0.47	99%
9	Chowan	63.28	54.52	8.76	116%
10	Northern Coastal Plain	61.84	52.26	9.58	118%
11	York-James	65.52	58.27	7.25	112%
12	Southeast Virginia	80.47	56.66	23.81	142%
13	Eastern Shore	60.90	48.83	12.07	125%
	Statewide	57.90	52.13	5.77	111%

	DROUGHT REGION	OBSERVED	Jul 1, 2009 NORMAL	- Sep 30, 2010 DEPARTURE	% OF NORM.
1	Big Sandy	60.23	57.62	2.61	105%

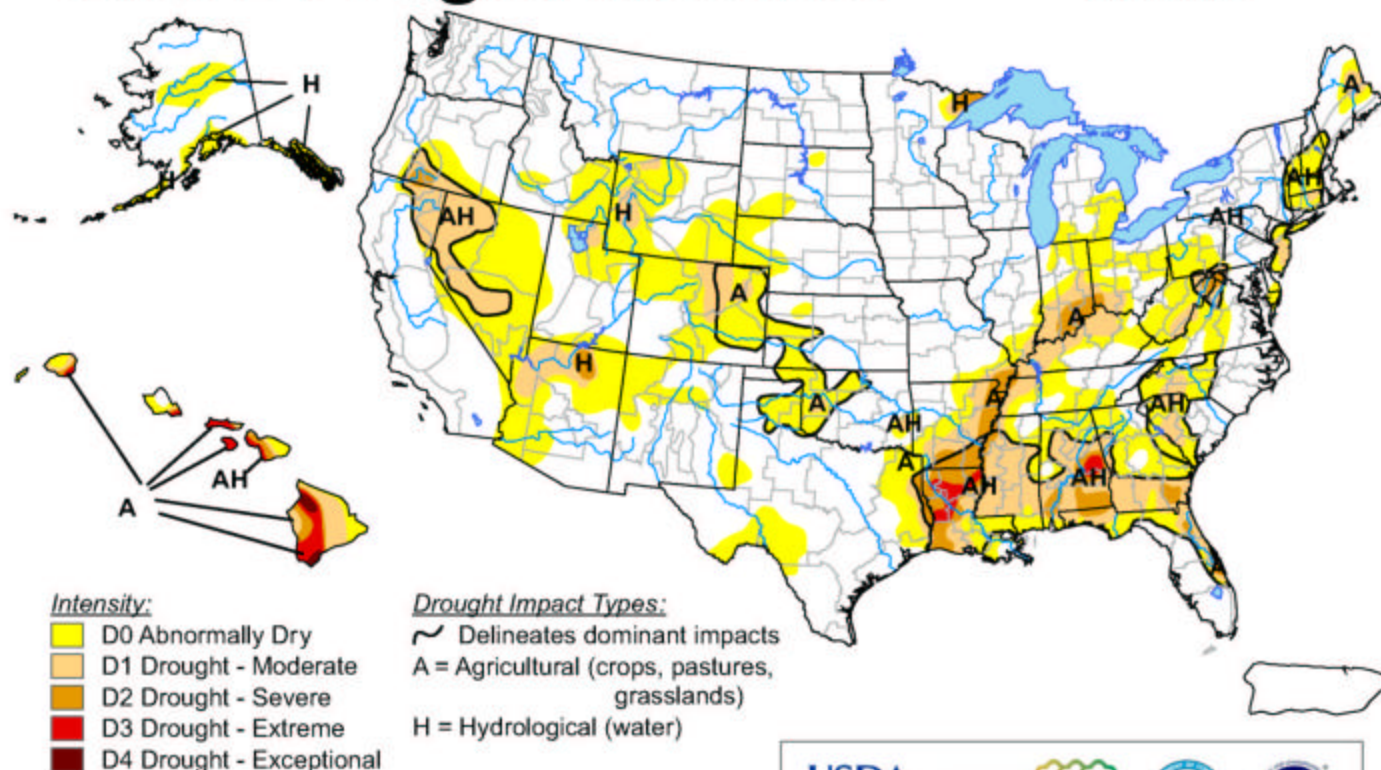
2	New River	58.82	51.35	7.47	115%
3	Roanoke	67.36	58.52	8.84	115%
4	Upper James	56.86	52.61	4.25	108%
5	Middle James	62.54	57.17	5.37	109%
6	Shenandoah	48.77	49.28	-0.51	99%
7	Northern Virginia	55.07	54.48	0.59	101%
8	Northern Piedmont	55.94	57.89	-1.95	97%
9	Chowan	67.29	59.03	8.26	114%
10	Northern Coastal Plain	66.70	56.71	9.99	118%
11	York-James	71.50	63.37	8.13	113%
12	Southeast Virginia	84.45	61.73	22.72	137%
13	Eastern Shore	66.69	52.83	13.86	126%
	Statewide	61.95	56.47	5.48	110%

APPENDIX B

U.S. Drought Monitor

October 5, 2010

Valid 8 a.m. EDT



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

<http://drought.unl.edu/dm>



Released Thursday, October 7, 2010

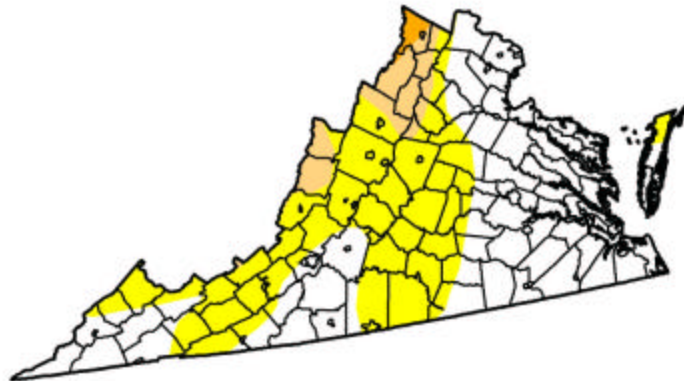
Author: Laura Edwards, Western Regional Climate Center

APPENDIX C

U.S. Drought Monitor Virginia

October 12, 2010
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	51.8	48.2	7.6	0.9	0.0	0.0
Last Week (10/05/2010 map)	51.8	48.2	7.6	0.9	0.0	0.0
3 Months Ago (07/20/2010 map)	14.3	85.7	38.1	0.0	0.0	0.0
Start of Calendar Year (01/05/2010 map)	100.0	0.0	0.0	0.0	0.0	0.0
Start of Water Year (10/05/2010 map)	51.8	48.2	7.6	0.9	0.0	0.0
One Year Ago (10/13/2009 map)	86.8	13.2	0.4	0.0	0.0	0.0



Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

The Drought Monitor focuses on broad-scale conditions.
Local conditions may vary. See accompanying text summary
for forecast statements.

<http://drought.unl.edu/dm>



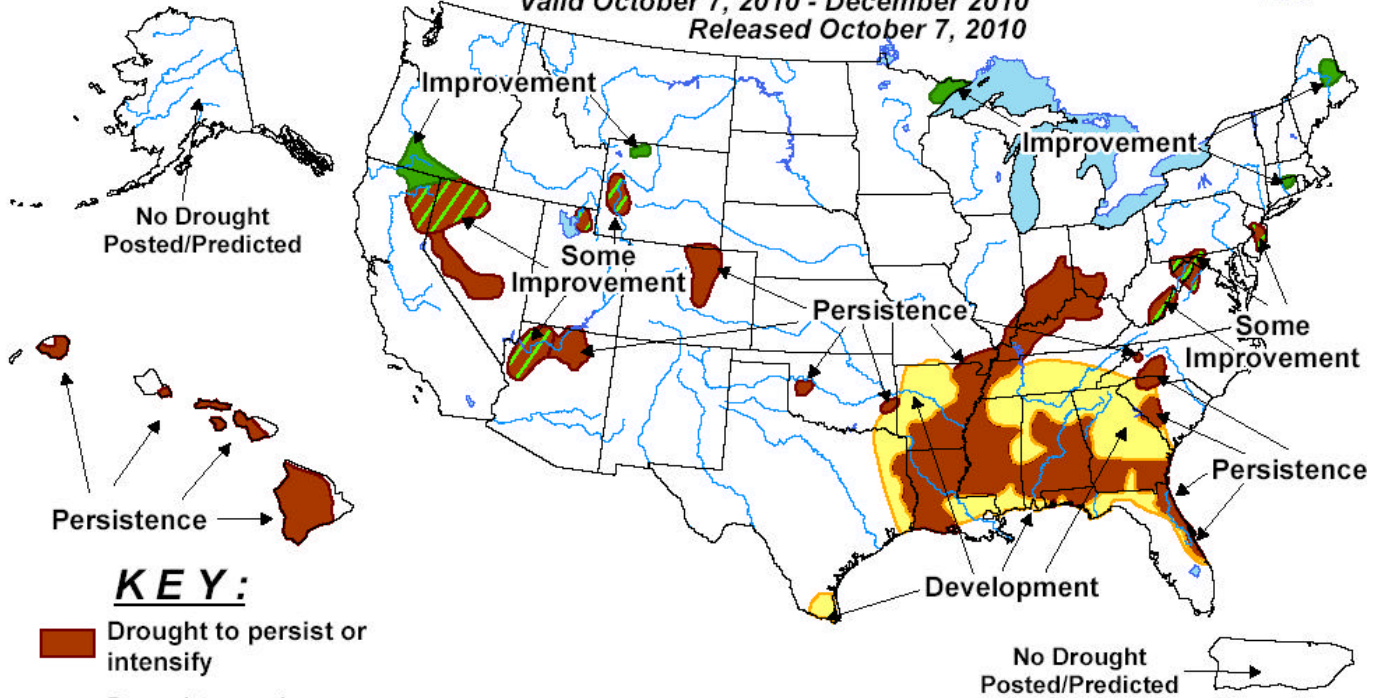
Released Thursday, October 14, 2010

Author: Laura Edwards, Western Regional Climate Center

APPENDIX D



U.S. Seasonal Drought Outlook Drought Tendency During the Valid Period Valid October 7, 2010 - December 2010 Released October 7, 2010



KEY:

- Drought to persist or intensify
- Drought ongoing, some improvement
- Drought likely to improve, impacts ease
- Drought development likely

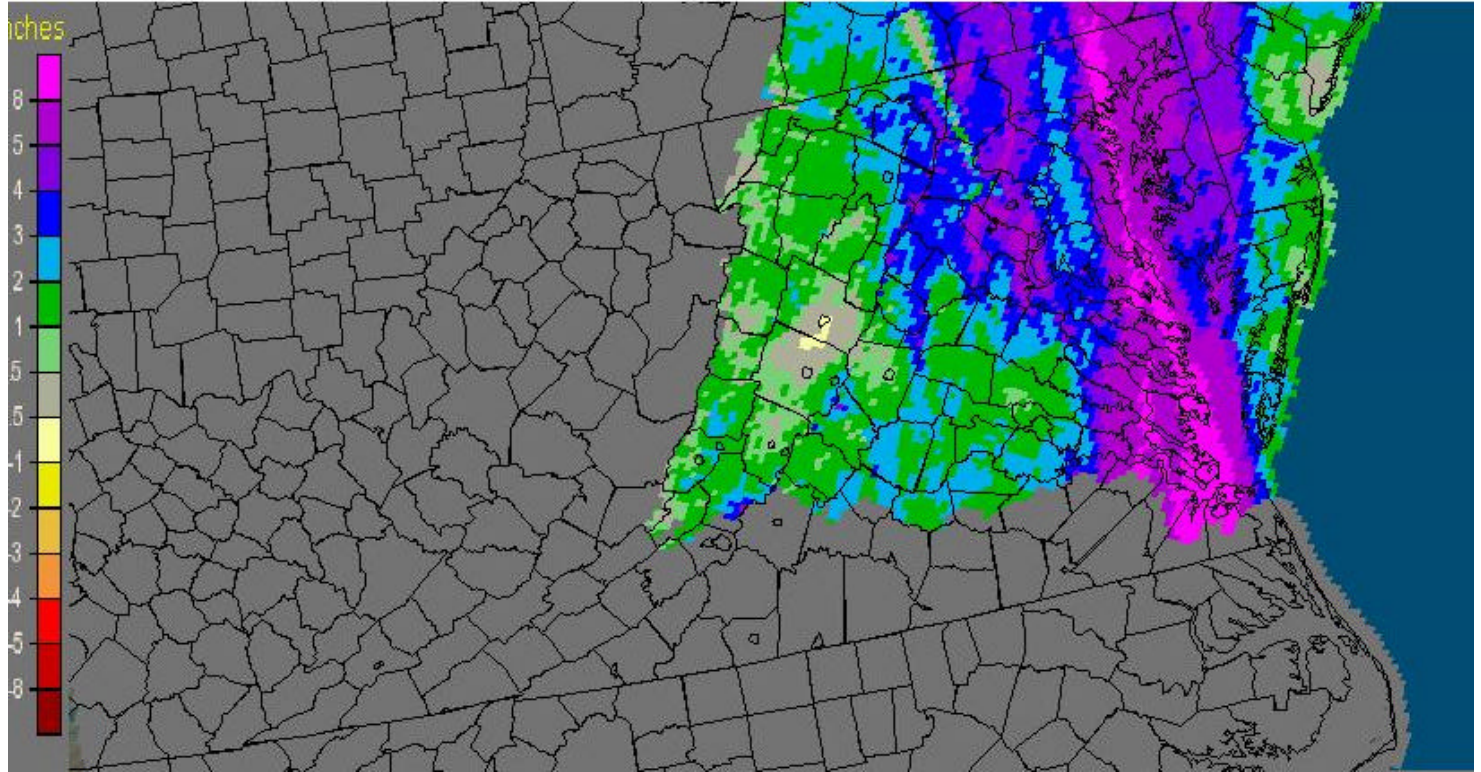
Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Short-term events -- such as individual storms -- cannot be accurately forecast more than a few days in advance. Use caution for applications -- such as crops -- that can be affected by such events. "Ongoing" drought areas are approximated from the Drought Monitor (D1 to D4 intensity). For weekly drought updates, see the latest U.S. Drought Monitor. NOTE: the green improvement areas imply at least a 1-category improvement in the Drought Monitor intensity levels, but do not necessarily imply drought elimination.

APPENDIX E

30-Day Departure from Normal Precipitation

Virginia: Current 30-Day Departure from Normal Precipitation

Valid at 10/8/2010 1200 UTC- Created 10/8/10 14:14 UTC



APPENDIX F

Condition of Public Water Supplies

October 5, 2010

ODW Drought Situation Report

Date: **10/5/10**

	Restriction totals	Population Totals
Mandatory	9	558,839
Voluntary	12	732,870
Total	21	1,291,709

N-None
M-Mandatory
V-Voluntary

B-Better
S-Stable/Same
W-Worse

PWSID	Waterworks	Source Name	Restrictions	Situation	Population Served
2003050	ACSA - Crozet	Beaver Creek Reservoir	V	B - 10/5/10 - Will continue voluntary conservation.	6,310
2003051	ACSA - Scottsville	Totier Creek Reservoir	V	B - 10/5/10 - Will continue voluntary conservation.	723
2003053	ACSA - Urban Area	Sugar Hollow, Ragged Mtn., South Rivanna, North Rivanna	V	B - 10/5/10 - Will continue voluntary conservation.	55,510
2187406	Town of Front Royal	South Fork Shenandoah River	N	B - 10/4/10 - No Water restrictions	12,500
2540500	City of Charlottesville	Sugar Hollow, Ragged Mtn., South Rivanna, North Rivanna	V	B - 10/5/10 - Will continue voluntary conservation.	41,487
3053280	DCWA Central (Dinwiddie County)	Appomattox River Water Authority (ARWA)	M	S- 10/04/2010 - Phase III emergency restrictions. ARWA reservoir level triggered call for mandatory restrictions on 9/7/2010 and emergency restrictions on 9/24/2010.	6,800
3081550	GCWSA - Jarratt	Nottoway River	N	S - 10/04/2010 - Waterworks production rate reduced due to lower demand; river level sufficient to allow plant operation at 1.9 mgd. Gage at	7,190

				Stony Creek indicates 4.4 feet.	
3093120	Isle of Wight County	Suffolk	N	B - 10/04/10 - Obtains water from Suffolk. Follows Suffolk's lead on conservation.	1,284
3095490	James City Service Authority	Ground water	V	B - 10/4/10 - Will continue with voluntary conservaton. Rains have lowered demand.	49,880
3149700	Puddledock Road	ARWA	M	S - 10/04/2010 - Emergency restrictions. ARWA reservior level triggered call for mandatory restrictions on 9/7/2010 and emergency restrictions on 9/24/2010. Level at 126" below top of dam as of 10/1/2010.	9,723
3550050	Chesapeake - Western Branch system	City of Portsmouth	N	S -10/4/2010 This portion of the city is consecutive to (receives water from) the city of Portsmouth. Will follow Portsmouth's lead on conservation.	36,642
3550051	Chesapeake	Northwest River, City of Norfolk Raw Water (Lake Gaston)	N	S -10/5/2010 Total rainfall for September 16.85 inches. They received 11.4 inches of rain on 9/30/2010. For October the total to date is 2.15 inches. There are no water restrictions in Chesapeake. Chlorides are used as an indicator of drought, the higher the levels the more concentrated the contaminant in a	103,504

				<p>lesser amount of surface water. Chlorides are slightly elevated 338 ppm (max). The range between 31-106 mg/l. Continuing to purchase raw water from Norfolk (7.5 MGD average). NWR averages 4.4 MGD. The Intown Lakes remain full and there are no irregularities in the tidal patterns in NWR.</p>	
3550052	Chesapeake - South Norfolk system	City of Norfolk	N	<p>S -10/4/2010-This portion of the city is consecutive to (receives water from) the city of Norfolk. Will follow Norfolk's lead on conservation.</p>	38,709
3570150	Colonial Heights	ARWA	M	<p>S - 10/04/2010 - Phase III Emergency restrictions as of 9/27/2010. Generally follow ARWA recommendations on water restrictions.</p>	17,286
3595250	Emporia	Meherrin River	N	<p>S - 10/04/2010 - Reservoir level sufficient for normal operation. ILUKA and power plant also withdrawing from river.</p>	5,600
3670800	Virginia-American Water Company (Hopewell)	Appomattox & James Rivers	N	<p>S - 10/04/2010 - Level at intakes sufficient to supply plant. Received 7.5" of rain last week. Still experiencing taste and odor issues (MIB in raw and finished water, but decreasing). Fort Lee being supplied from Hopewell due</p>	28000 - Primary / 45463 Total including Consecutive System (Ft. Lee)

				to ARWA water restrictions.	
3700500	Newport News	Chickahomony River, Skiffs Creek, Diascand, Little Creek, Harwoods Mill, Lee Hall	N	<p>B - 10/04/10 - Total reservoir capacity now up to 78% (was at 63% on 9/27/10). At current delivery rate range 37 - 40 MGD, there is about 221 days of stored water available at current demand. Chickahominy flow is above normal. Skiffs, Diascand, Lee Hall and Harwoods Mill dams have overflowed in the past few days. Pumping from Chickahominy and Diascund to Little Creek, so that it can be re-filled (currently about 9 feet down, but level is rising).</p>	414,000
3710100	Norfolk	Lake Prince, Lake Burnt Mills, Western Branch reservoir, Nottoway River, Blackwater River, 4 western wells; Little Creek reservoir, Lakes Smith, Lawson, Whitehurst, and Wright. Lake Gaston.	N	<p>B - As of 10/04/10, reservoirs at 103.7% (up from 81.6% on 09/27/10) - at least three of the western reservoirs are flowing over the spillway. Historic reservoir capacity is 83.4% at this time of year. Avg. pumping from Lake Gaston = 21.5 MGD. Total Reservoir Storage = 15,768 MG. Approx. 325 days of storage remaining under current demand with 21.5 MGD pumping from Lake Gaston, and</p>	261,250 - Primary / 755,617 - Total including consecutive systems (Va Beach + military bases).

				approx. 225 days of storage remaining under current demand with no pumping from Lake Gaston. Current demand of approx. 70 MGD.	
3730750	Petersburg	ARWA	M	S - 10/04/2010 - Phase III emergency restrictions requested 09/26/2010. Generally follow ARWA recommendations on water restrictions.	33,740
3740600	Portsmouth	Lakes Cohoon, Meade, Kilby, and Speights Run	N	B - As of 10/01/10, reservoirs at 100% (up from 67% on 09/24/10) - at least three of reservoirs are flowing over the spillways. Median reservoir capacity is 92% for the month and historical average capacity is 85% (period of 1969-2008). The emergency wells are OFF. Estimated 257 days of storage remaining at current pumpage and rainfall is 171 days (avg. pumpage is 15.1 MGD).	100,400 - Primary / 120,400 Total including consecutive systems (military bases)

3800805	Suffolk	Lone Star Lakes, Cumps Mill Pond	N	<p>B 10/4/2010-Will follow Portsmouth's lead and the region as far as conservation. Received 12.69 inches of rain from 9/26/2010 through 10/3/2010. Average reservoir levels : Southern Lakes at 105% capacity, for the Northern Lakes at 82.35% and Crumps Mill Pond at 66.67% (9/27/10). The Southern Lakes are for emergency use only. The operator states that they are in better condition since the last report. No conservation measures implemented at this time but will continue to monitor.</p>	62,562
3810900	Virginia Beach	Norfolk	N	<p>B - 10/04/10 - Obtains water from Norfolk.</p>	423,743
3830850	Williamsburg	Waller Mill Reservoir	N	<p>B 10/03/10: 9.5" above primary spillway - about 98% of usable capacity. 375 days of usable storage based on 1498 MG at 4 mgd.</p>	16,400
4041035	APPOMATTOX RIVER WATER AUTHORITY	Surface water; Lake Chesdin	M	<p>B- Wholesaler to Chesterfield County, Prince George County, Dinwiddie County; Cities of Petersburg and Colonial Heights. Within the past week, the reservoir has risen from 140" below top of dam to 36" below top of dam. Emergency restrictions are still</p>	200,000

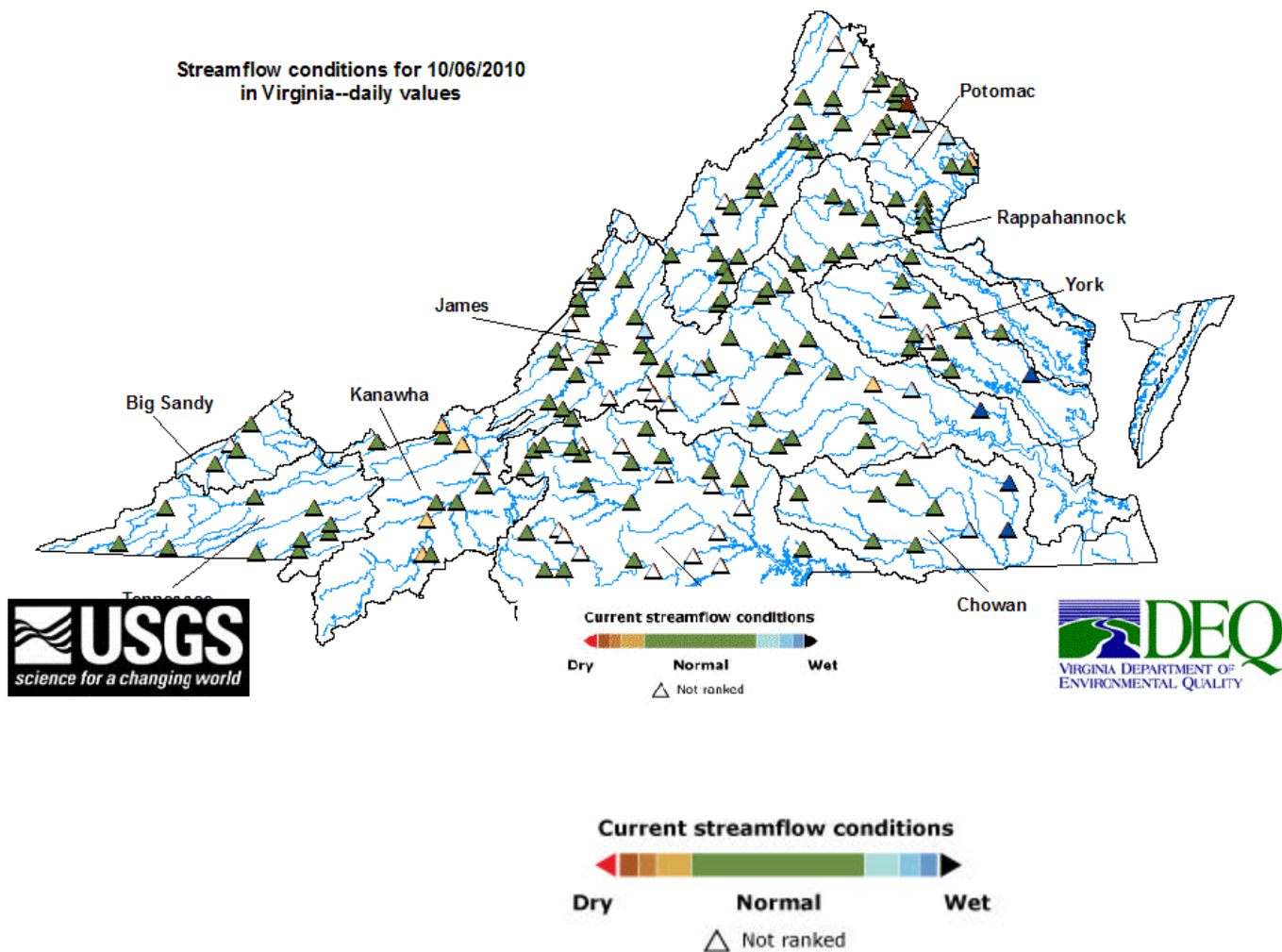
				in place.	
4041845	CHESTERFIELD CO CENTRAL WATER SYSTEM	Surface water; Swift Creek reservoir; purchases finished water	M	B- Purchases water from the City of Richmond and the Appomattox River Water Authority. Within the past week, the Swift Creek Reservoir has risen from 2.3 feet below top of dam to 1.0 feet below top of dam. Emergency restrictions are still in place because of the low water level in Lake Chesdin (ARWA).	286,000
4057800	TAPPAHANNOCK, TOWN OF	Groundwater wells	N	S	2,100
4073311	GLOUCESTER CO WATER TREATMENT PLT	Surface water, Beaverdam reservoir; 2 deep groundwater wells	N	S -Reservoir is about 5 inches below overflow level.	8,870
4075283	EASTERN GOOCHLAND CENTRAL WATER SYSTEM	Purchased surface water	V	W -purchases water from Henrico County	2,500
4075735	JAMES RIVER CORRECTIONAL CTR	Surface water; James River	N	S - Conservation at all DOC facilities	9,300
4085398	HANOVER SUBURBAN WATER SYSTEM	Surface water; North Anna River; some groundwater wells; purchases finished water	V	B (see Richmond)	71,000
4085770	SPRING MEADOWS- MEADOW GATE	Groundwater wells	N	S	2,300
4087125	HENRICO COUNTY WATER SYSTEM	Surface water; James River	V	B (see Richmond)	289,000
4101900	WEST POINT, TOWN OF	Groundwater wells	N	S	3,000
4127110	DELMARVA PROPERTIES	Groundwater wells	N	S -New Kent Co. encourages conservation at all county owned waterworks.	7,700
4145675	POWHATAN COURTHOUSE	Groundwater wells	N	S	2,600

4193280	COLONIAL BEACH, TOWN OF	Groundwater wells	N	S	3,300
4760100	RICHMOND, CITY OF	Surface water; James River	V	B- water levels do not affect intake; James River Regional Flow Management Plan set restrictions based on James River level for counties of Henrico, Chesterfield, Goochland, and Hanover counties, which purchase water from the City. Voluntary restrictions implemented. Recent rains has improved the situation.	197,000
6033085	Caroline Utility	Groundwater	M	S - Mandatory water use restriction of High-Level 3 went into effect 7/13/2010. On 9/14/2010, restriction level was reduced to Low - Level 1 due to decreased customer demand. (Updated 10/1/10)	3,600 Primary
6047500	Town of Culpeper	Surface water - Lake Pelham	N	B - On Oct 4, Lake Pelham level was 3" above invert of overflow.	14,200
6059501	Fairfax Water	Surface Water - Potomac River and Occoquan Reservoir	N	B - 10/05/10 - Rains have increased river flows significantly	823,216 primary 1.8MM total
6061200	Marshall	Groundwater	M	S - The WSA Alert Messaging Service maintains the Water Use Restriction Notice as of 10/5/2010. The mandatory water use restriction is not directly drought related but depends on water source development.	2,134
6061600	Town of Warrenton	Surface (Cedar Run) and groundwater	V	B-On Tuesday, October	11,160

				5, Warrenton Reservoir surface was at 441.1 ft vs full level of 445.3 ft.	
6107150	Town of Hamilton	Groundwater	V	S - 10/5/10 Voluntary water use restrictions initiated 7/6/2010	2,000
6107300	Town of Leesburg	Surface Water - Potomac River	N	B - 10/05/10 - Rains have increased river flows significantly	46,300
6107600	Town of Purcellville	Surface water/groundwater	V	B - 10/5/10 - Water levels in surface reservoir improving. Two new groundwater sources may become available for use in October. Voluntary water conservation initiated 7/2/10.	6,300
6107650	Town of Round Hill	Groundwater	M	S - 10/5/10 - Mandatory water use restrictions effective 9/20/10.	3,156
6137500	Town of Orange	Surface: Rapidan River	N	B	4,500
6137999	Wilderness	Surface - Rapidan River	N	B	11,331
6600100	City of Fairfax	Surface Water	N	B - Goose Creek flow has increased sufficiently	24,000

APPENDIX G

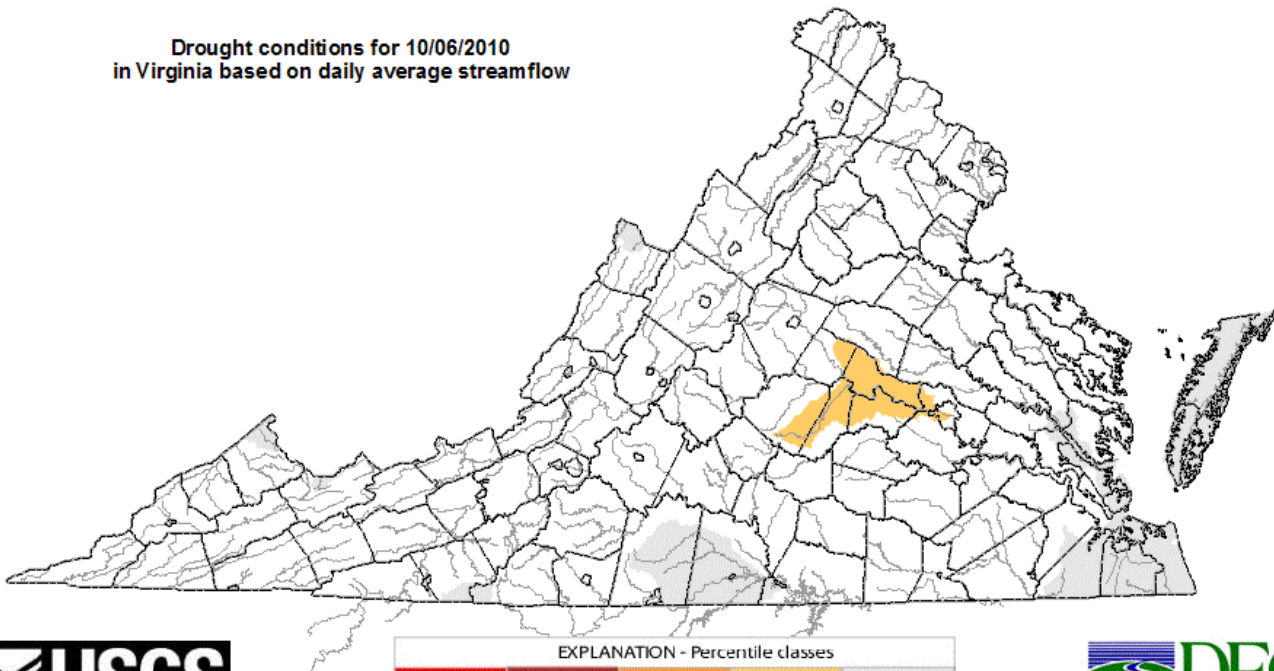
USGS Streamflow Conditions for October 6, 2010



APPENDIX H

Drought Watch -- USGS State Information on Drought Map of below normal daily average streamflow

Drought conditions for 10/06/2010
in Virginia based on daily average streamflow



EXPLANATION - Percentile classes				
Low	<=5	6-9	10-24	Insufficient data
Extreme drought	Severe drought	Moderate drought	Below normal	



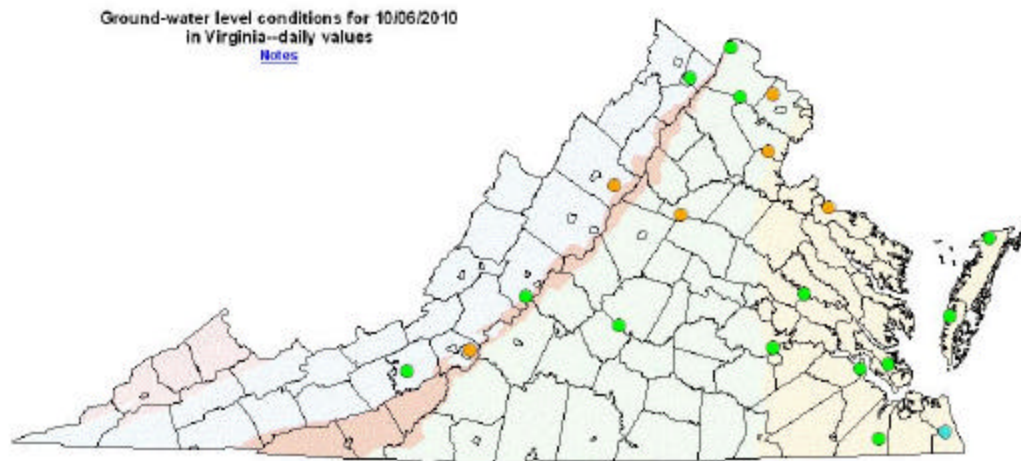
EXPLANATION - Percentile classes				
Low	<=5	6-9	10-24	Insufficient data
Extreme drought	Severe drought	Moderate drought	Below normal	

APPENDIX I

Virginia Climate Response Network

October 6, 2010

Climate Response Network Locations in Virginia



Explanation - Percentile classes (symbol color based on most recent daily value.)									
●	●	●	●	●	●	●	●	●	●
New Low	<5	5-10	10-24	25-75	76-90	90-95	>95	New High	Not Ranked
	Well Below Normal		Below Normal	Normal	Above Normal	Well Above Normal			

Explanation - Percentile classes (symbol color based on most recent daily value.)									
●	●	●	●	●	●	●	●	●	●
New Low	<5	5-10	10-24	25-75	76-90	90-95	>95	New High	Not Ranked
	Well Below Normal		Below Normal	Normal	Above Normal	Well Above Normal			